

Effect of *Trichoderma* spp. on Damping - Off Disease of Tomato Caused by *Pythium aphanidermatum* (Edson) Fitz.

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Management of soil-borne pathogens by using biocontrol agents is an efficient and long term method. The major problem of applying antagonists to soil is their inability to become established in the ecosystem and overcome the resistance of soil microflora to the introduction of new micro organisms (Alexander, 1971).

A pot culture experiment was conducted to find out the efficacy of antagonists in the control of damping-off disease of tomato caused by *Pythium aphanidermatum* (Edson) Fitz. Both sterilized and unsterilized garden soils were used. *P. aphanidermatum* multiplied in oat meal river sand medium was added at the rate of 5 per cent by weight of the soil. Three days after the application of pathogen one per cent of the antagonists viz., *Trichoderma harzianum* Rifai and *T. viride* Pers fr. multiplied in wheat bran peat mixture (1:1 W/W) were added separately to the soil. The treatments were (i) Pathogen + Antagonist, (ii) Pathogen alone, (iii) Seed + Antagonists and (iv) Seed alone which served as control. Seeds were sown at the rate of 50 per pot immediately after the application of antagonist and watered. The pre emergence damping-off was recorded on 5th-day and post emergence on 20th day.

The combined and individual effect of antagonist and pathogen significantly influenced the pre and post emergence damping-off of tomato. Generally the pre emergence damping-off was more in sterilized soil than in unsterilized soil. In the case of post emergence damping-off, the incidence was minimum due to the establishment of the antagonist in the sterilized soil. In the case of pre emergence damping-off, application of pathogen alone in sterilized soil recorded the highest disease incidence (53.3 per cent). In seed alone which served as control no disease incidence was seen. Seed plus antagonists viz., *T. harzianum* and *T. viride* treatments reduced the damping off incidence in both sterilized and unsterilized soil which was less than the combined treatment of pathogen with antagonist and control. Post emergence damping-off was maximum on 20th day in all the treatments. The application of pathogen resulted in maximum disease incidence in both soils and among them sterilized soil recorded higher incidence. In control and seed plus antagonist, there was no disease incidence in sterilized soil when compared to unsterilized soil (60.0 and 31.3 per cent respectively) whereas the combined treatment of seed and antagonists exhibited less incidence in unsteril-

Table 1. Effect of *Trichoderma* spp. on damping-off of Tomato Seedlings (Percentage)

Treatments	PRE EMERGENCE				POST EMERGENCE			
	<i>T. harzianum</i>		<i>T. viride</i>		<i>T. harzianum</i>		<i>T. viride</i>	
	Sterilized soil	Unsterilized soil	Sterilized soil	Unsterilized soil	Sterilized soil	Unsterilized soil	Sterilized soil	Unsterilized soil
Pathogen + antagonist	30.0	20.0	33.3	20.0	13.3	40.0	12.6	46.6
Pathogen alone	53.3	26.6	53.3	26.6	93.3	80.0	93.3	80.0
Seed + antagonist	00.0	10.0	00.0	10.0	00.0	26.6	00.0	31.3
Control	00.0	23.3	00.0	23.3	00.0	60.0	00.0	60.0
C.D (P=0.05) = 7.4				8.4	10.5		12.7	

ized soil (26.6 per cent) than pathogen with antagonists, pathogen alone and control also (Table - 1).

In general, application of antagonist to the soil reduced the damping-off incidence to a great extent. The results were in accordance with Harman *et al.* (1980) and Sivan *et al.* (1984) who reported that seed treatment and soil application of antagonists like *T.viride* and *T.harzianum* were useful in the control of *Pythium* spp. Krishnamoorthy and Bhaskaran (1990) also observed that soil application of *T.viride* and *T. harzianum* effectively controlled the damping-off of tomato caused by *Pythium indicum* Balakrishnan.

KEY WORDS : Tomato, damping-off
Trichoderma harzianum
T. viride

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